Income shocks and domestic violence : evidence from Nepal

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Income Shocks and Domestic Violence: Evidence from Nepal

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Abstract

This paper aims at determining the main causes and triggers of domestic violence in the country of Nepal. It explains how economic factors may outweigh cultural beliefs in their weight on domestic violence. For this purpose, I study the impact of an income shock on domestic violence. To prevent possible bias arising from endogeneity, income shocks are instrumented with rainfall shocks. The results show that physical, sexual and emotional violence appear indeed to be determined by changes in a household's economic status. However, the more important factors impacting domestic violence turn out to be characteristics of women in the household and in society: women's decision making power, education and employment status. These results confirm and reinforce the crucial role of women in the process of development. Furthermore, the results hint at policy advice towards addressing domestic violence indirectly. Policies promoting income stability, aiming at gender equality in education and on the labor market, as well as stricter laws on alcohol consumption, can help enhancing the efficiency of direct policies.

Keywords: domestic violence, rainfall shock, income shock, woman's status, alcohol consumption, education

JEL classification: D1, J12, J16

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1 Introduction

The third Millennium Development goal by the United Nations states the promotion of gender equality and the empowerment of women (UN, 2015). Women's empowerment is widely recognized to be a driver of development leading to a greater well-being in the society.

However, violence against women in the household and in society impede the efficient pursuit of this goal. Although it is present all over the globe, there are some countries and societies where it seems to be particularly prevalent. Nepal is known to be an ethnically very diverse country, attributing little rights to women. It was only in 2008 that Nepal became a Democratic Republic and started to catch up and address issues the country was lagging behind. In 2009, the "Domestic Violence Crime and Punishment Act" was passed, established to give a first legal regulation to this issue. Even though direct efforts were made to reduce domestic violence, such as introducing shelter homes for women who suffered from violence, it appears to have achieved less than the desired effect (Government of Nepal, 2012).

It is, thus, crucial to analyze what drives domestic violence, to see whether policies addressing the issue indirectly can reinforce direct policies in their efficiency. An example of this is given by Björkman-Nyqvist (2013) who argues that policies assuring income stability are likely to improve gender equality in primary education.

For this purpose, I set up an empirical strategy which aims at explaining three forms of domestic violence (physical, emotional and sexual violence) through changes in income as well as a set of other explanatory variables. An income shock (a positive or negative income change) is instrumented by a rainfall shock (a deviation of rainfall from its mean) to counteract possible bias arising through endogeneity and reverse causality between income and domestic violence. This strategy follows approaches by existing work that shows how social and behavioral theories can be driven by economic circumstances. Miguel (2005) shows how income shocks cause religious violence, Miguel and Satyanath and Sergenti (2004)

provide evidence of the impact of income shocks on the probability of a civil war and Björkman-Nyqvist (2013) provides a study on the effect of income shocks on gender gaps in education.
The remaining paper is structured in the following way. Section 2 gives a short description of the background of domestic violence in Nepal, as well as a brief review of the existing literature. Section 3 explains the data and key variables used for this empirical analysis, which is explained in detail in section 5. Section 4 shows some descriptive statistics. Section 6 presents the results of the analysis, emphasizing the different forms of domestic violence, as well as the channels and robustness tests. Section 7 concludes the study.

2 Background

After the 2009 law against domestic violence, the year 2010 was declared by the Government as the “Year against Gender Violence", where the laws' execution and implementation was reinforced and hospital-based crisis management centers were introduced. However, the efforts seemed to achieve less than the desired effect: Gender Based Violence seems to persist by 2012. Thus, one of the Government's key policy instruments for the following years is the “National Strategy Plan of Action on Gender Empowerment and Ending GBV 2012-2017" (Government of Nepal, 2012).
As a description of the situation in Nepal in 2012, the Government of Nepal carried out “A Study on Gender-Based Violence Conducted in Selected Rural Districts of Nepal". The findings of this report emphasize the amplitude of the problem of gender based violence in Nepal. More than half of the women in the sample did not even know that there existed any laws addressing Gender Based Violence, and only five in a hundred women knew of shelter homes at the district level (Government of Nepal, 2012). Almost half of all women in the sample had suffered some form of violence at least once, with emotional and physical violence being the most prevalent forms. Even though almost one hundred percent

of the women disagree on beating being justified, far more than half the sample of women had never talked to anyone about their experiences (Government of Nepal, 2012). From the men's point of view, the same study reports the awareness of men of violence against women. Among the most prevalent causes for gender-based violence men cited unemployment, non-awareness of rights and laws, alcohol consumption and social norms. Finally, the 2012 report of the Government of Nepal indicates that the highest exposure to the risk of suffering from gender based violence is within the household, particularly from intimate partners / husband.

Given these descriptive statistics that point out the alarming situation regarding gender based violence in Nepal, my study tries to provide causal evidence for the most prevalent for of gender based violence: domestic violence.[1]

The subject of domestic violence has already been explored in different directions. Some of the recent work points out channels that will be verified in the present study as well; amongst these alcohol consumption by the husband/partner and the status of the woman in society and in the household. A remarkable number of studies focus on domestic violence in India. Chin's (2011) work explores the effect of female labor force participation on the risk of domestic violence and finds that female employment reduces spousal violence. Bloch and Rao (2002) suggest that, for India, it is likely that violence in the household may be strongly associated to economic incentives. Panda and Agarwal (2005) explore women's property status in Kerala as explanatory variable for domestic violence, and find that women that own land or a house face lower risk of spousal violence. Contrasting results to this are found by Weitzmann (2014) who shows women's superior material power may actually increase gender-based violence, due to patriarchal norms. Luca, Owens and Sharma in their 2015 paper in the American Economic Review assess the effect of prohibition on alcohol consumption in India on gender-based

[1] Violence against women is a broad term and includes domestic violence, rape, human trafficking, general harassment, etc. This work focuses on one face of violence against women: domestic violence. This is mostly due to the availability of detailed data on domestic violence, and is validated by the fact that most of the violence against women (excluding trafficking) occurs within the household.

violence. They find that these laws significantly reduce alcohol consumption and violence against women and emphasize the importance of these results for policy considerations. Similar work was done for other countries. Aizer (2010) uses panel data of the United States to show that a decline in the wage gap can explain, to a certain degree, a reduction in violence against women. Bowlus and Seits (2006) estimate a model that determines domestic violence, emphasizing the role of employment and divorce before abuse and as reaction. Bhattacharyya, Bedi and Chhachhi (2011) treat women's employment status as endogenous to solve ambiguity in literature about the effect of women's employment status on domestic violence. They find that both paid work and house ownership reduce marital violence. Koenig (2003) explores domestic violence in rural areas of Bangladesh and finds that increased education and higher socioeconomic status decrease the risk of domestic violence. Khan, Sindher, Hussain (2013) find that in Bahawalpur female education appears to be key element to consider when working on policies that reduce violence against women. Yount, Halim, Schuler, and Head (2013) study the behavior leading women to consider beating as justified in Bangladesh.

3 Data

Domestic Violence

The dataset used for this study is provided by the Nepal Demographic and Health Survey (DHS) 2011, a micro level dataset representing 10,826 Nepalese households. In 2011, for the first time the module related to domestic violence was included in the Nepal DHS, due to the awareness of the seriousness of this topic in the previous years (Women's Rehabilitation Centre Nepal, 2009). A random sample of women was selected for the module on domestic violence. 3,546 women responded to the questions of this module, where only one woman for each of the selected households was interviewed. The questionnaire regarding domestic violence is a detailed set of questions regarding physical, emotional and sexual violence against women in the household, as well as a section on the help-seeking

behavior by women who experienced violence.
Physical violence, sexual violence and emotional violence are binary variables, equal to one if the woman has answered with “Yes" to at least one question in a set of questions. For the questions in detail, see “Detailed data description" in the appendix.
To assess whether a woman who suffered from any form of domestic violence has ever seeked help, for the purpose of this study I use the question asking whether the respondent did not seek help from anyone, considering the answer "No" equal to having seeked help (NDHS, 2011). This is, of course, considered conditional on having suffered from any form of domestic violence.

Rainfall
Given that there might arise issues of endogeneity when trying to estimate the causal impact of changes in income on domestic violence, I use rainfall shocks to instrument income stocks. This is an instrument that has been used frequently in research located in countries that face a high dependence on agriculture and do not yet possess the technical means to compensate for floods or droughts. In fact, over 70 percent of the Nepalese population works in agriculture, which makes up 38 percent Nepal’s GDP (USAID, 2015). A rainfall shock is an exogenous weather variation that impacts domestic violence only through the corresponding income shock. As a source of exogenous weather variation for the households, I use data of the Global Precipitation Climatology Project (GPCP) by the NASA, of gauge-based gridded monthly precipitation. The resolution of this data is at a 2.5 times 2.5 latitude - longitude degree interval. The match of the databases works through GPS coordinates for both the DHS and the rainfall database. Following the empirical strategy of Björkman-Nyqvist (2013), the measure for a rainfall shock is the deviation of the natural logarithm of the average rainfall of the year 2011 from the natural logarithm of the average rainfall from the period from 1999 until 2011, for household i: $\ln R_{i2011} - \ln \overline{R_i}$.

Explanatory variables

The explanatory variables are taken from the NDHS 2011 database. The DHS survey does not provide a direct measure of income, thus they propose to use their measure of wealth to assess a household's economic status. Among the reasons for not using income to measure a household's economic situation, is the fact that many people in agriculture-strong developing countries do not know their exact income. Furthermore, people may hide their income from (especially government) interviewers, households may have various different income sources and income might not be available on monthly or yearly basis but for example on seasonal basis (DHS, 2004). An alternative would be to proxy a household's income with its consumption; based on the income equation $Income = Consumption + Savings$, and assumed that savings are almost nil. However, DHS gives reasons to why they do not use this measure. Amongst these, there is the fact that expenditures might be made by different members of the household, and thus are omitted when the head of the household answers. Furthermore, it is difficult to assess which expenditures to take into account and on what temporary basis (DHS, 2004). Thus, the DHS considers "Wealth" to be a better measure than income or consumption to assess the "economic status" of a household. "Wealth" for the DHS is an indicator variable, constructed from a large set of other indicator variables; these variables contain detailed information on household assets and utility services, ranging from electricity, to the fact of owning a radio, a bicycle, a vehicle, having piped drinking water, owning land, the amount of people sleeping in one bedroom, and many more.[2] According to the calculated value for each household, five quintiles are formed, from poorest to richest (DHS, 2004).
Other explanatory variables for household's, woman's and partner's characteristics are taken from the DHS survey as well. They are explained as they are introduced into the model.

[2]For a detailed description on the construction and weighting scheme of the wealth index, see "DHS Comparative Reports 6: The DHS Wealth Index", 2004.

4 Descriptive Statistics

The descriptive statistics from the NDHS database confirm the results from the Government of Nepal in their 2012 report on gender based violence. Table 1 shows that 23% of the women in the sample have suffered physical violence at least once, 15% sexual violence and 18% emotional violence.

Table 1: Descriptive statistics

Stats	**Physical Violence**	**Sexual Violence**	**Emotional Violence**	**Person seeked help**
mean	0.23	0.15	0.18	0.21
sd	0.42	0.35	0.38	0.41
min	0.00	0.00	0.00	0.00
max	1.00	1.00	1.00	1.00
N	3546.00	3546.00	3546.00	1190.00

Physical Violence, Sexual Violence and Emotional Violence are binary variables, equal to one if the interviewed woman has ever suffered from the respective form or violence and zero otherwise. Person seeked help is a binary variable equal to one if the interviewed woman has seeked help, conditional on having experienced any form of violence.

Conditional on having suffered any of the above mentioned forms of violence, only 21% of the women have seeked help.

Table 2: Correlation table

Variables	Wealth	Physical Violence	Sexual Violence	Emotional Violence	Person seeked help
Wealth	1.000				
Physical Violence	-0.115	1.000			
	(0.000)				
Sexual Violence	-0.090	0.393	1.000		
	(0.000)	(0.000)			
Emotional Violence	-0.102	0.510	0.422	1.000	
	(0.000)	(0.000)	(0.000)		
Person seeked help	0.052	0.119	0.047	0.169	1.000
	(0.073)	(0.000)	(0.110)	(0.000)	

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables. For detailed description see section 3: Data. Physical Violence, Sexual Violence and Emotional Violence are binary variables, equal to one if the interviewed woman has ever suffered from the respective form or violence and zero otherwise. Person seeked help is a binary variable equal to one if the interviewed woman has seeked help, conditional on having experienced any form of violence.

Table 2 shows the correlation between wealth and the different forms of vio-

lence, giving evidence for the significant negative correlation between wealth and all three forms of violence; where physical violence appears to have the strongest negative correlation to wealth. The fact of a woman having asked for help, on the other hand, appears to be positively correlated with the household's wealth.
It is now important to determine whether the relationship between the different forms of violence and wealth *causal*, to show far a shock in the economic status of a household affects the different forms of domestic violence.
Wealth is unlikely to be the main and only variable explaining the reasons for domestic violence to occur. Thus, control variables are included in the regressions, suggested by the 2012 report of the Government of Nepal and by former research in this field. These variables include indicators on social norms (e.g. religion and ethnicity), household characteristics (e.g. household location and number of children) as well as important characteristics of the women that suffered domestic violence (e.g. their age, educational attainment, decision making power in the household, employment status) and of her partner/husband (e.g. his educational attainment and alcohol consumption behavior).
Figure 1 in the appendix shows three of the mentioned variables that might be decisive in explaining the occurrence of domestic violence.

Table 3: Correlation table

Variables	Wealth	Deviation Rainfall
Wealth	1.000	
Deviation Rainfall	-0.219	1.000
	(0.000)	

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables. For detailed description see section 3: Data. Deviation Rainfall is the deviation of the logarithm of the average rainfall 2011 from the logarithm of the total average rainfall between 1999 and 2011.

Although a set of control variables (the above mentioned characteristics) are included in the model, there might still be unobserved characteristics that drive both wealth and domestic violence at the same time, such as characteristics of the woman's and husband's parents. Furthermore, the relationship might as well

go the other way round: domestic violence impacting wealth. This is to say that the regression results may be distorted through endogeneity and reverse causality bias, if it is not properly accounted for.[3] Thus, a rainfall shock is used to instrument wealth. Rainfall shocks are supposed to impact domestic violence only through income shocks and present thus, theoretically, a good instrument. If it is, indeed, a valid instrument in this case, is tested in section 6.1: First stage.
Table 3 represents the correlation between wealth and the rainfall shock, which appears to be highly significantly negative: a positive or negative deviation of rainfall from its average negatively impacts wealth. This is line with the literature and the fact of Nepal being a country highly based on agriculture and with little technology to counteract such rainfall shocks.

5 Empirical Strategy

The empirical strategy used for this work consists, short, in defining each of the three forms of violence, as well as help seeking behavior, as dependent variables and using wealth and a household's, woman's and husband's characteristics as explanatory variables; whereas wealth is instrumented by the deviation of the logarithm of average rainfall in 2011 from the logarithm of average rainfall from 1999 to 2011.
In her 2013 paper, Martina Björkman-Nyqvist uses rainfall shocks as proxy for income shocks. However, she mentions this strategy to be used because of non-availability of data on income; the more accurate strategy is to use a rainfall shock as instrument rather than proxy for income (Björkman-Nyqvist, 2013).
The baseline equation is, thus:

$$DomesticViolence_i = \beta_0 + \beta_1 Wealth_i + \beta_2 X_i + \epsilon_i \quad (1)$$

$DomesticViolence_i$ stands for each of the four dependent variables. $PhysicalViolence_i$ is a binary variable equal to one if the woman interviewed in household i has

[3] These issues will be discussed in detail in section 5: Empirical strategy.

ever experienced any form of physical violence, and equal to zero otherwise. $SexualViolence_i$ as well as $EmotionalViolence_i$ are constructed in the same way as $PhysicalViolence_i$: equal to one if the woman in household i has ever experienced any form of sexual violence / emotional violence, and equal to zero otherwise. $PersonSeekedHelp_i$ refers to the help seeking behavior of the woman interviewed in household i and is equal to one if the woman has seeked help, and equal to zero the woman has not seeked help, conditional on having experienced any form of domestic violence. X_i is a vector of several control variables, amongst these indicators on social norms within household i (e.g. religion and ethnicity), household characteristics (e.g. location (rural-urban), number of children in a household) as well as important characteristics of the women that suffered domestic violence (e.g. their age, educational attainment, decision making power in the household, employment status) and on her partner/husband (e.g. his educational attainment and alcohol consumption behavior).

The first specification will be the most parsimonious one, including dummy variables for four of the five religions[4], a dummy variable equal to one if the district in which household i is located has shelter homes for women who have suffered from domestic violence, a dummy variable equal to one if household i is located in the Terai region (to catch primarily the ethnic and social particularity in this region), as well as a dummy variable equal to one if the household is located in a urban area. The second specification includes control variables for characteristics of the interviewed woman and her husband in household i. More specifically for the woman these variables are: the woman's age, her educational attainment, a dummy variable equal to one if the woman has some decision making power in the household (as a proxy for her empowerment)[5], a dummy variable equal to one if the woman is self-employed as well as a dummy variable equal to one if the woman works for family members[6], a dummy variable equal to one if the woman is currently pregnant. Furthermore, the husband's educational attainment, as well

[4]The fifth religion, "Kirat", is used as control group.

[5]See "Detailed data description" in the appendix.

[6]The control group is the third group: woman works for someone else.

as a dummy variable equal to one if the woman thinks beating is justified in certain circumstances[7] and the number of living children are included. Even though alcohol consumption of the husband appears to be a major cause for violence according the 2012 report by the Government of Nepal, it is not included in any of the specifications. This is due to the fact that in this study, I treat alcohol consumption to be an outcome variable (mainly related to income shocks) and thus treat it as possible channel through which wealth changes impact domestic violence. This channel has as well been explored by Luca, Owens and Sharma (2015), who found it to impact domestic violence significantly. The authors, who worked with microlevel data in India, make use of ongoing changes in alcohol consumption laws. In this study I explore the same channel but starting from an income shock as trigger rather than a change in the legal environment.

Back to the empirical strategy, finally, the third specification of the model for each dependent variable includes district fixed effects. Including district fixed effects allows to control for the differences across districts in any observable or unobservable characteristic; such that we are left with happens within the districts.

β_0 and ϵ_i represent intercept and error term, respectively. The coefficients of interest are β_1, the coefficient of household i's wealth, as well as β_2 (or the respective coefficients of the above mentioned control variables). In the regression analysis, β_1 (with its standard error) shows the direction (positive or negative), the significance, as well as the magnitude of the causal impact of a household's change in wealth on the different forms of domestic violence; the same to be said for the coefficients of the control variables.

The regression techniques used for this analysis are Probit, given that the dependent variables are binary variables taking a value of either one or zero, and IV Probit, once the instruments are included. The estimator used for IV Probit is Newey's (1987) minimum Chi-Squared estimator. In order to check for the robustness of the results, especially because the Probit estimator may be biased if a large number of fixed effects are included, the same regressions are carried out with Linear Probability estimators: OLS and IV 2SLS (see appendix).

[7] See "Detailed data description" in the appendix.

For the two-stages estimates (IV Probit and IV 2SLS) the first stage of the regression is defined in the following way:

$$Wealth_i = \gamma_0 + \gamma_1(\ln R_{i2011} - \ln \overline{R_i}) + \gamma_2(\ln R_{i2011} - \ln \overline{R_i})^2 + \gamma_3 X_i + \theta_i \quad (2)$$

The measure of a rainfall shock is the deviation of the natural logarithm of the average rainfall 2011 from the natural logarithm of the total average rainfall from 1999 until 2011. To control for the fact that the relationship between rainfall and wealth might not be linear[8], the squared term of the variable that accounts for the rainfall shock is introduced as a second instrument. Equation (5), as well as the two instruments in relation with wealth, are analyzed in detail in section 6.1: First stage.

6 Results

This section aims at presenting and discussing the results based on the empirical strategy explained in the former section. Before presenting the tables with the results of the regressions, it is to say that two things are common in all regressions. All the regressions have clustered standard errors, and the coefficients reported in the tables are the marginal effects of each explanatory variable on the dependent variable, holding all other explanatory variables constant.

6.1 First stage

The first step of the two-step regression regresses wealth on all exogenous regressors, to point out the impact of a rainfall shock and its squared term on wealth.

Table 4 shows the first stage of the two stages regression. We see that the linear variable for rainfall shock, Dev.Rf.11, is positive and significant, whereas the

[8]It might be, indeed, that for very high levels of rainfall (floods) and very low levels of rainfall (droughts) the deviation of rainfall from its average harms wealth, whereas within a certain range it might improve wealth, or keep it at previous levels.

Table 4: First stage

	Wealth
Dev.Rf.11	1.183**
	(0.497)
(Dev.Rf.11)^2	−12.63***
	(1.902)
Muslim	0.0320
	(0.195)
Christian	0.191
	(0.196)
Buddhist	0.232
	(0.160)
Hindu	0.344**
	(0.149)
Terai Region	0.814***
	(0.0407)
Urban	1.417***
	(0.0442)
District has shelter homes	0.191***
	(0.0421)
Constant	2.356***
	(0.159)
Observations	3546

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables. For detailed description see section 3: Data. Dev.Rf.11 is the deviation of the logarithm of average rainfall in 2011 from the logarithm of the total average rainfall over the years 1999 to 2011. The table further includes the fact of belonging to one of the four out of five religions, of living in the Terai region, of living in an urban area and of living in a district that has shelter homes for women who experienced violence.

squared term is negative and significant. This implies that the relationship between the deviation of rainfall from its average and wealth is increasing but concave. The relationship could, thus, be monotonically increasing or have a turning point. In order to find the possible turning point, I calculate the first derivative of wealth with respect to change in rainfall and set it equal to zero. The goal is to find the threshold for which a further increase in the deviation of rainfall from its average decreases wealth.

$$\frac{\delta Wealth}{\delta DevRf11} = 1.183 + 2 * (-12.63) * DevRf11 > 0 \quad (3)$$

This gives a threshold of 0.047. Given that this threshold lies between the minimum and maximum values of the DevRf11 variable (-0.095 and 0.334 respectively), I can conclude that the relationship is increasing until this threshold and decreasing afterwards; there is, thus, a turning point. This relationship and threshold reflect the observed pattern of rainfall in highly agricultural low developed countries. Very low levels of rainfall (droughts), have a negative impact on wealth; as rainfall increases, wealth increases as well, until a certain threshold - the optimal amount of rainfall. A further increase in rainfall leads to a decrease in wealth, until, again very high levels of rainfall (floods) have a negative impact on wealth. However, it has to be paid attention that the 0.047 is not the threshold *amount* of rainfall but the threshold *deviation* of rainfall from its average. This is to say that the more the current rainfall deviates from its average (in both directions: more or less rain), the more negatively it impacts wealth.
Table 5 shows the first stage statistics, to test the relevance of the instruments. The F-Statistic is above the conventional threshold of 10 and is highly significant. This is the first step towards concluding our instruments to be strong. Furthermore, a Wald Test is carried out, which also leads to reject the Null hypothesis of weak instruments (not reported).

Table 5: Statistics: first stage

Variable	R-sq.	Adjusted R-sq.	Partial R-sq.	F(2,3536)	Prob > F
Wealth	0.3856	0.3840	0.1070	211.9	0.0000

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables. For detailed description see section 3: Data. Deviation Rainfall is the deviation of the logarithm of the average rainfall 2011 from the logarithm of the total average rainfall between 1999 and 2011.

The first requirement of a valid instrument is to be correlated with the endogenous regressor, here wealth, which we just showed is the case. The second requirement is that the instruments must not be correlated with the error term.

This requirement can only be tested if there are more instruments than endogenous regressors. Since this is the case, the Sargan's (1958) and Basmann's (1960) Chi-Squared tests can be carried out. The results are the following:
Test of overidentifying restrictions:
Sargan (score) chi2(1) = .001796($p = 0.9662$)
Basmann chi2(1) = .001791($p = 0.9662$)

Looking at the p-values we see that both test statistics are insignificant: we do not reject the Null-Hypothesis that our instruments are significant. This means that both instruments are valid and the model is correctly specified.
The first stage and the mentioned tests were carried out for all dependent variables and all specifications, but are not reported here. The results hold and thus we can now move on to the second stage for each dependent variable.

6.2 Physical Violence

Table 6 represents the regressions carried out with physical violence as dependent variable, in three different specifications.
Model (1) points out the negative impact of an increase in wealth on the probability of physical violence to occur in a household. Given that the values of the coefficients are the marginal effects of an increase in the respective explanatory variable on the probability of physical violence, holding all other variables constant, they can be interpreted not only in terms of direction but also in terms of magnitude. We see that for both, Probit and IV Probit, the coefficient of wealth is negative. The magnitude changes slightly between the two estimation techniques. Interpreting the coefficient of wealth for the IV Probit regression in model (1), shows that an increase in wealth from one quintile to the next induces a 3.8 percentage point decrease in the probability of physical violence to occur. Given that the mean value of physical violence is 0.23 (the probability for physical violence to occur is 23%), 3.8 percentage points is a remarkable decrease / increase in the probability of physical violence. More precisely, at the mean value, an decrease

Table 6: Physical Violence

	(1)		(2)		(3)	
	Probit	IV Probit	Probit	IV Probit	Probit	IV Probit
Wealth	−0.0554***	−0.0376**	−0.0171**	−0.0316	−0.0200**	−0.0175
	(0.00555)	(0.0175)	(0.00796)	(0.0325)	(0.00858)	(0.105)
Muslim	0.0592	0.0612	0.0591	0.0694	0.0748	0.0739
	(0.0679)	(0.0612)	(0.0988)	(0.125)	(0.0962)	(0.0950)
Christian	0.0354	0.0362	0.0290	0.0306	−0.00145	−0.00136
	(0.0650)	(0.0663)	(0.0744)	(0.0709)	(0.0740)	(0.0739)
Buddhist	−0.0808	−0.0862	−0.0842	−0.0780	−0.0861	−0.0867
	(0.0558)	(0.0580)	(0.0596)	(0.0704)	(0.0611)	(0.0690)
Hindu	−0.0709	−0.0734	−0.0858	−0.0830	−0.103*	−0.103*
	(0.0496)	(0.0532)	(0.0553)	(0.0613)	(0.0574)	(0.0621)
Terai Region	0.143***	0.129***	0.109***	0.119***		
	(0.0163)	(0.0219)	(0.0201)	(0.0257)		
Urban	0.0315*	0.00600	0.0500**	0.0618*	0.0454*	0.0437
	(0.0188)	(0.0331)	(0.0216)	(0.0321)	(0.0239)	(0.0776)
District has shelter homes	0.00584	0.000416	−0.0147	−0.0124		
	(0.0140)	(0.0153)	(0.0156)	(0.0160)		
Woman's empowerment			−0.0212	−0.0211	−0.0277	−0.0275
			(0.0238)	(0.0210)	(0.0242)	(0.0243)
Education: woman			−0.0276***	−0.0239***	−0.0262***	−0.0267
			(0.00672)	(0.00883)	(0.00678)	(0.0201)
Woman self employed			−0.0922***	−0.0848**	−0.0692**	−0.0704
			(0.0315)	(0.0335)	(0.0324)	(0.0620)
Woman works for family member			−0.0934***	−0.0944***	−0.0747***	−0.0749***
			(0.0218)	(0.0240)	(0.0233)	(0.0236)
Woman's current age			0.000603	0.00128	0.000980	0.000893
			(0.00125)	(0.00171)	(0.00125)	(0.00390)
Woman currently pregnant			−0.0402	−0.0433	−0.0296	−0.0293
			(0.0366)	(0.0371)	(0.0358)	(0.0379)
Number of living children			0.0130**	0.0110	0.0135**	0.0137
			(0.00617)	(0.00778)	(0.00630)	(0.0115)
Education: husband			−0.0248***	−0.0218**	−0.0229***	−0.0234
			(0.00647)	(0.0103)	(0.00623)	(0.0230)
Beating justified			0.0256	0.0305	0.0103	0.00965
			(0.119)	(0.119)	(0.121)	(0.111)
District Fixed Effects	*No*	*No*	*No*	*No*	*Yes*	*Yes*
Mean: Physical Violence	0.23	0.23	0.23	0.23	0.23	0.23
Observations	3546	3546	2680	2680	2653	2653

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables. For detailed description see section 3: Data. Physical Violence, Sexual Violence and Emotional Violence are binary variables, equal to one if the interviewed woman has ever suffered from the respective form or violence and zero otherwise. The instruments for wealth are the deviation of the logarithm of average rainfall in 2011 from the logarithm of the total average rainfall over the years 1999 to 2011, and this term squared. The table further includes the fact of belonging to one of the four out of five religions, of living in the Terai region, of living in an urban area and of living in a district that has shelter homes for women who experienced violence. Further control variables regard characteristics of the woman, her husband and the household. These variables are described in detail in section 5: Empirical strategy.

of wealth from one quintile to the next (a negative shock) increases the probability for physical violence to occur in a certain household from 23% to 26.8%, holding all other variables constant. Vice versa happens for a positive income shock. This confirms, thus, the hypothesis of a negative income shock instrumented by a rainfall shock (i.e. a too high deviation from average rainfall - both negative (drought) or positive (flood)) increasing the probability of physical violence to occur within a household, and vice versa. The other significant variable in model (1) is the fact of living in the Terai region or not. This variable appears to have an even stronger magnitude than wealth: the fact of living in this region increases the probability of physical violence by 12.9 percentage points; at the mean, this is equal to an increase from 23% probability to 35.9% probability of physical violence to occur in a certain household. It is difficult to predict which characteristics of the region this is due to. An idea might be that the population in this area is very particular in terms of ethnic, social and economic characteristics; which is enhanced by the fact that the region is on the border to India. In fact, the Terai area stretches to both sides of the border. (Moock & Leslie, 1986).
Model (2) includes more control variables, more specifically regarding the woman and her husband. The first evident difference to model (1) is the fact that, once instrumented, in this model wealth appears to be no longer significant. The Terai region dummy has the same sign and similar magnitude as in the first specification. The fact of living in urban areas appears to increase the probability of physical violence in this specification. Most interesting in this specification are the newly introduced explanatory variables. Woman's educational attainment, her being self employed or working for a family member significantly decrease the probability for physical violence to occur in the household. This holds for both regressions: with and without instruments. Looking at the IV Probit specification of model (2), we see that a one step increase in the education of the woman (e.g. from primary to secondary school attendance), decreases the probability of physical violence at its mean from 23% to 20.6%; the fact of being self employed decreases the probability from 23% to 14.5% and the fact of working for a family member decreases the probability from 23% to 13.6%. This provides, indeed, evi-

dence of a remarkable impact of the status of the woman in household and society on physical violence. These findings confirm the results by other authors; Khan et al. (2013) finds women's education to work against domestic violence; Aizer (2010), Chin (2011) and others show how women's employment impacts domestic violence. Finally, the educational attainment of the husband shows a significant impact as well: an increase in its schooling level decreases physical violence by 2.18 percentage points.

Including district fixed effects in model (3), "Terai region" is no longer included in the regression, given that it might lead fixed effects to be dropped as a consequence of being largely a linear combination of districts. "District has shelter homes" is omitted as well. Most explanatory variables show the same sign, significance and similar magnitude in the Probit specification as in the former models. However, once instrumented, most of the variables loose their significance. This result has to be interpreted with caution, given that the instruments vary on 2.5 x 2.5 longitude latitude grids and it is, hence, possible that the district fixed effects take away a big part of the variance of the instrument[9]. Furthermore, the Wald test of exogeneity suggests that "wealth" is likely to be exogenous in this specification and, thus, not necessarily needs to be instrumented.

Finally, looking at all three models and their specifications, we can conclude the following: (1) A change in wealth is one main driver of physical violence. However, once more control variables and district fixed effects are introduced, this effect becomes less significant. (2) The fact of living in the Terai region significantly increases the probability of physical violence; this may be due to ethnic, social and economic particularities in this region rather than geographical characteristics. (3) The main driver of physical violence can be summarized as the role of the woman in society and household: a woman's educational attainment, her being self employed or working for a family member significantly decreases the probability of

[9]Indeed, Maccini and Yang in their 2009 year paper argue that the *"Inclusion of district-season fixed effects controls for persistent effects of rainfall on the localities (and households)[...]. Effects of rainfall shocks on long-run income of households should be common to all individuals born in the same area and so should be absorbed by the district-season fixed effects."* (Maccini & Yang (2009), American Economic Review p.1014)

physical violence. (4) Also husband's education appears to play a nontrivial role.

6.3 Sexual Violence

For sexual violence, at first sight the main significant variables throughout models and specifications seem to be similar to the ones of physical violence.

Table 7: Sexual Violence

	(1)		(2)		(3)	
	Probit	IV Probit	Probit	IV Probit	Probit	IV Probit
Wealth	−0.0330***	−0.0643***	−0.0104	−0.0933***	−0.0115	−0.322***
	(0.00504)	(0.0161)	(0.00689)	(0.0263)	(0.00858)	(0.0520)
Muslim	0.0371	0.0342	0.0613	0.120	0.0940	0.152*
	(0.0589)	(0.0660)	(0.0879)	(0.113)	(0.0865)	(0.0787)
Christian	0.0706	0.0693	0.0412	0.0492	0.0609	0.0129
	(0.0548)	(0.0520)	(0.0622)	(0.0615)	(0.0623)	(0.0713)
Buddhist	−0.0476	−0.0391	−0.0593	−0.0249	−0.0243	0.0656
	(0.0464)	(0.0422)	(0.0508)	(0.0550)	(0.0511)	(0.0572)
Hindu	−0.0202	−0.0171	−0.0286	−0.0146	−0.00810	0.0618
	(0.0423)	(0.0411)	(0.0469)	(0.0553)	(0.0461)	(0.0476)
Terai Region	0.0613***	0.0870***	0.0381**	0.0966***		
	(0.0142)	(0.0197)	(0.0158)	(0.0233)		
Urban	0.0277*	0.0720***	0.0295*	0.0982***	0.0226	0.239***
	(0.0148)	(0.0260)	(0.0175)	(0.0269)	(0.0196)	(0.0355)
District has shelter homes	−0.00432	0.00518	−0.0134	−0.000640		
	(0.0125)	(0.0133)	(0.0142)	(0.0144)		
Woman's empowerment			−0.0530***	−0.0524**	−0.0659***	−0.0411
			(0.0180)	(0.0204)	(0.0196)	(0.0420)
Education: woman			−0.0123**	0.00822	−0.0122*	0.0510***
			(0.00627)	(0.00832)	(0.00645)	(0.0183)
Woman self employed			−0.0885***	−0.0483*	−0.0738***	0.138*
			(0.0254)	(0.0261)	(0.0279)	(0.0794)
Woman works for family member			−0.0841***	−0.0918***	−0.0697***	0.00108
			(0.0171)	(0.0152)	(0.0194)	(0.0507)
Woman's current age			−0.000314	0.00362**	−0.000140	0.0113***
			(0.00112)	(0.00156)	(0.00122)	(0.00236)
Woman currently pregnant			0.00474	−0.0126	0.0177	−0.0272
			(0.0297)	(0.0264)	(0.0319)	(0.0314)
Number of living children			0.00808	−0.00325	0.00851	−0.0276**
			(0.00588)	(0.00670)	(0.00613)	(0.0121)
Education: husband			−0.0160***	0.000949	−0.0172***	0.0594**
			(0.00582)	(0.00895)	(0.00611)	(0.0235)
District Fixed Effects	*No*	*No*	*No*	*No*	*Yes*	*Yes*
Mean: Sexual Violence	0.15	0.15	0.15	0.15	0.15	0.15
Observations	3546	3546	2680	2680	2446	2446

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables. For detailed description see section 3: Data. Physical Violence, Sexual Violence and Emotional Violence are binary variables, equal to one if the interviewed woman has ever suffered from the respective form or violence and zero otherwise. The instruments for wealth are the deviation of the logarithm of average rainfall in 2011 from the logarithm of the total average rainfall over the years 1999 to 2011, and this term squared. The table further includes the fact of belonging to one of the four out of five religions, of living in the Terai region, of living in an urban area and of living in a district that has shelter homes for women who experienced violence. Further control variables regard characteristics of the woman, her husband and the household. These variables are described in detail in section 5: Empirical strategy.

Looking at models (1) and (2) first, leads to the following interpretations. Looking at the IV Probit specification of model (2), an increase (decrease) in wealth by one quintile decreases (increases) the probability for sexual violence to occur at the mean from 15% to 5.7% (24.3%). This is a remarkable magnitude. About the same magnitude is observable for the residence in the Terai region and in Urban areas - both increasing the probability for sexual violence to happen by approximately 10 percentage points. Looking at woman's and husband's characteristics in model (2), we see that again the status of a woman in society and household significantly impacts domestic violence. However, for sexual violence it is woman's empowerment in the household that counts, rather than her education and her employment status; once introducing the instruments, woman's education and her being self employed become insignificant. Woman's empowerment, thus the fact if the woman participates in the decision making of the household, decreases the probability of sexual violence to happen by 5.2 percentage points. The fact of the woman working for a family member show an even higher magnitude: it decreases the probability of sexual violence to occur from 15% to 5.8%. This variable can be interpreted as a combination of a woman's power in society (her having a job) and a woman's power in the family (her working for a family member). Husband's education appears to be significant in the Probit specification, but is insignificant once the instruments are introduced. This variable seems, thus, to be a less important driver of sexual violence than the above mentioned variables.
Moving to model (3) in table 7 gives slightly contradictory results. Even though the significant variables appear to be the same as in the former models, some of them seem to change signs between the Probit and IV Probit specification (see woman's education, woman self employed, husband's education). Furthermore, the coefficients suggest an excessively high magnitude which is not quite realistic given the results of the former models and specifications. However, as mentioned already in the former section, the IV specification with district fixed effects has to be handled with care, since the district fixed effects might catch variations in rainfall for each district (Maccini & Yang, 2009). Hence, I focus on the interpretation of the Probit specification of model (3) with district fixed effects. The Probit

regressions appears to be in line with models (1) and (2), pointing out once more the variables related to the status of the woman in the household and in society as main explanatory variables of the model, rather than wealth. To a lower degree also husband's education plays a role.
Finally, similar conclusions as for physical violence can be drawn: (1) A change in wealth drives sexual violence, but only to a certain extent. Variables regarding the woman's status appear to be more important in the explanation of sexual violence. (2) The fact of living in the Terai region significantly increases the probability of sexual violence; and so does the fact of living in urban areas. (3) The main driver of sexual violence can be summarized as the role of the woman in society and household. However, in contrast to physical violence, the woman's decision making power in the household, together with her working for a family member, appears to be the most significant driver counteracting sexual violence. It is, thus, rather the woman's role in the family rather than in society that counts for sexual violence. (4) Husband's education seems to play a less important role than for physical violence.

6.4 Emotional Violence

The third and last indicator of domestic violence is emotional violence. This third form of violence seems to have slightly different drivers than the former discussed forms. Throughout all three models and specifications wealth is not constantly significant; it becomes insignificant once introducing the instruments and more control variables. Also residence in the Terai region and urban areas loose significance and magnitude throughout the specifications, compared to sexual and physical violence; so does husband's education. Woman's education, her being self employed or working for a family member are highly significant. The two variables focusing on employment show a remarkable magnitude: ranging from 7 percentage points to 10 percentage points. At the mean of 18%, the fact of a woman being self employed can decrease the probability of emotional violence to occur by up to almost 11 percentage points: from 18% to 7%. An interesting

Table 8: Emotional Violence

	(1)		(2)		(3)	
	Probit	IV Probit	Probit	IV Probit	Probit	IV Probit
Wealth	−0.0369***	−0.0154	−0.0113	−0.00159	−0.0186**	0.0499
	(0.00537)	(0.0154)	(0.00787)	(0.0282)	(0.00803)	(0.116)
Muslim	0.0207	0.0224	0.0277	0.0206	0.0304	0.00513
	(0.0692)	(0.0681)	(0.103)	(0.0996)	(0.0977)	(0.0929)
Christian	0.0662	0.0668	0.0437	0.0427	0.00629	0.00818
	(0.0616)	(0.0711)	(0.0689)	(0.0517)	(0.0666)	(0.0696)
Buddhist	−0.0607	−0.0664	−0.0757	−0.0796	−0.0718	−0.0855
	(0.0550)	(0.0551)	(0.0597)	(0.0612)	(0.0610)	(0.0659)
Hindu	−0.0183	−0.0208	−0.0350	−0.0367	−0.0396	−0.0533
	(0.0476)	(0.0529)	(0.0532)	(0.0487)	(0.0557)	(0.0602)
Terai Region	0.0586***	0.0415**	0.0369**	0.0302		
	(0.0151)	(0.0201)	(0.0187)	(0.0263)		
Urban	0.0278*	−0.00286	0.0478**	0.0397	0.0265	−0.0217
	(0.0169)	(0.0219)	(0.0206)	(0.0297)	(0.0210)	(0.0845)
District has shelter homes	−0.0226*	−0.0290*	−0.0485***	−0.0500***		
	(0.0135)	(0.0163)	(0.0163)	(0.0167)		
Woman's empowerment			0.0105	0.0105	−0.00158	0.00341
			(0.0204)	(0.0207)	(0.0205)	(0.0238)
Education: woman			−0.0202***	−0.0227***	−0.0217***	−0.0336
			(0.00622)	(0.00866)	(0.00632)	(0.0206)
Woman self employed			−0.102***	−0.107***	−0.0754**	−0.109*
			(0.0298)	(0.0326)	(0.0301)	(0.0621)
Woman works for family member			−0.0767***	−0.0759***	−0.0640***	−0.0685***
			(0.0192)	(0.0182)	(0.0192)	(0.0209)
Woman's current age			−0.000720	−0.00118	−0.000698	−0.00310
			(0.00116)	(0.00175)	(0.00118)	(0.00419)
Woman currently pregnant			−0.0237	−0.0215	−0.0164	−0.00721
			(0.0323)	(0.0321)	(0.0334)	(0.0369)
Number of living children			0.00818	0.00951	0.0102*	0.0163
			(0.00565)	(0.00599)	(0.00575)	(0.0117)
Education: husband			−0.0128**	−0.0148*	−0.00914	−0.0232
			(0.00637)	(0.00879)	(0.00622)	(0.0241)
District Fixed Effects	*No*	*No*	*No*	*No*	*Yes*	*Yes*
Mean: Emotional Violence	0.18	0.18	0.18	0.18	0.18	0.18
Observations	3546	3546	2680	2680	2611	2611

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables. For detailed description see section 3: Data. Physical Violence, Sexual Violence and Emotional Violence are binary variables, equal to one if the interviewed woman has ever suffered from the respective form or violence and zero otherwise. The instruments for wealth are the deviation of the logarithm of average rainfall in 2011 from the logarithm of the total average rainfall over the years 1999 to 2011, and this term squared. The table further includes the fact of belonging to one of the four out of five religions, of living in the Terai region and thus one of its ethnicities, of living in an urban area and of living in a district that has shelter homes for women who experienced violence. Further control variables regard characteristics of the woman, her husband and the household. These variables are described in detail in section 5: Empirical strategy.

feature of emotional violence is that, for the first time throughout the analysis, the fact of living in a district that has shelter homes for women who had suffered from violence, significantly decreases the probability for this form of violence to occur. The residence in a district with shelter homes can decrease the probability of emotional violence by up to 5 percentage points; at the mean from 18% to 13%. The effort of the Government to introduce these shelter homes seems, thus, making a difference only for emotional violence. Which channel this works through is difficult to say. It might work through the feeling of shame related to the other two forms of violence, or the idea of some forms of violence being justified.
The conclusions regarding emotional violence are slightly different than for the other two forms of domestic violence. (1) A change in wealth appears not to be a main driver of emotional violence. (2) The fact of living in the Terai region and in urban areas increase the probability of emotional violence to happen, but only to a limited extent and significance. (3) Common to the other forms of domestic violence, a woman's role in society and household still appears to be a main driver of emotional violence. Husband's education seems to play a less important role than for physical violence. (4) In contrast to the other forms of violence, the fact of living in a district that provides shelter homes for women who suffered from violence, significantly decreases the probability for emotional violence to occur.

6.5 Help seeking behavior

The probability of a woman having seeked help after having suffered any form of violence appears to be difficult to predict. Hardly any explanatory variable is significant and remains significant throughout the different specifications.
For model (1) we observe a positive impact of a change in wealth on the probability that a woman seeks help: the change from one wealth quintile to the next increases the probability to seek help at the mean from 21% to 26.6% (coefficient from IV Probit). In the IV Probit specification, the fact of living in urban areas decreases the probability to seek help by 6.5 percentage points. The strongest drivers, in this first model, seem to be the religions, that have had little to no sig-

Table 9: Woman seeked help

	(1)		(2)		(3)	
	Probit	IV Probit	Probit	IV Probit	Probit	IV Probit
Wealth	0.0163*	0.0560*	0.00595	0.0275	0.00794	0.105
	(0.00923)	(0.0295)	(0.0137)	(0.0569)	(0.0170)	(0.138)
Muslim	−0.280***	−0.281**	−0.227	−0.242*	−0.201	−0.220
	(0.108)	(0.116)	(0.140)	(0.143)	(0.147)	(0.157)
Christian	−0.0316	−0.0427	−0.0187	−0.0239	0.0416	0.0289
	(0.0897)	(0.108)	(0.0955)	(0.122)	(0.105)	(0.115)
Buddhist	−0.0484	−0.0670	−0.0885	−0.101	−0.0254	−0.0560
	(0.0836)	(0.0991)	(0.0975)	(0.111)	(0.107)	(0.115)
Hindu	−0.148**	−0.152*	−0.129	−0.132	−0.0819	−0.104
	(0.0750)	(0.0863)	(0.0813)	(0.0991)	(0.0903)	(0.0982)
Terai Region	0.00442	−0.0214	0.0161	0.00373		
	(0.0245)	(0.0337)	(0.0318)	(0.0490)		
Urban	−0.0186	−0.0652	0.0253	0.00935	−0.0162	−0.0711
	(0.0291)	(0.0442)	(0.0328)	(0.0507)	(0.0417)	(0.0872)
District has shelter homes	0.0384	0.0211	0.00116	−0.00441		
	(0.0262)	(0.0275)	(0.0308)	(0.0413)		
Woman's empowerment			0.0224	0.0256	0.0295	0.0438
			(0.0403)	(0.0444)	(0.0446)	(0.0494)
Education: woman			0.0109	0.00504	0.00684	−0.00958
			(0.0126)	(0.0145)	(0.0139)	(0.0276)
Woman self employed			−0.0502	−0.0647	−0.0452	−0.101
			(0.0506)	(0.0876)	(0.0556)	(0.0959)
Woman works for family member			−0.0135	−0.0130	−0.0342	−0.0461
			(0.0329)	(0.0395)	(0.0362)	(0.0405)
Woman's current age			0.00344*	0.00260	0.00294	−0.000144
			(0.00198)	(0.00280)	(0.00215)	(0.00512)
Woman currently pregnant			−0.00161	0.00405	0.0158	0.0270
			(0.0654)	(0.0655)	(0.0682)	(0.0726)
Number of living children			0.00473	0.00714	0.0128	0.0205
			(0.0101)	(0.0137)	(0.0113)	(0.0159)
Education: husband			0.00636	0.00247	0.00834	−0.0104
			(0.0104)	(0.0153)	(0.0119)	(0.0296)
Beating justified			−0.0596	−0.0634	0.0401	0.0268
			(0.155)	(0.119)	(0.215)	(0.226)
District Fixed Effects	*No*	*No*	*No*	*No*	*Yes*	*Yes*
Mean: Woman seeked help	0.21	0.21	0.21	0.21	0.21	0.21
Observations	1190	1190	883	883	778	778

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables. For detailed description see section 3: Data. Person seeked help is a binary variable equal to one if the interviewed woman has seeked help, conditional on having experienced any form of violence. The instruments for wealth are the deviation of the logarithm of average rainfall in 2011 from the logarithm of the total average rainfall over the years 1999 to 2011, and this term squared. The table further includes the fact of belonging to one of the four out of five religions, of living in the Terai region and thus one of its ethnicities, of living in an urban area and of living in a district that has shelter homes for women who experienced violence. Further control variables regard characteristics of the woman, her husband and the household. These variables are described in detail in section 5: Empirical strategy.

nificance in predicting any form of violence. It appears that Muslims and Hindus are less likely to seek help, to a very high magnitude, that at the mean can lead to a zero probability of seeking help.
However, the significance of the coefficients of these variables tends to disappear once more control variables and district fixed effects are included. Thus, it is likely that in the first model the religions catch the effects of household, woman, husband and district characteristics and that therefore the predictions of the first model do not hold. Finally, no reliable predictions of help seeking behavior can be made based on the models in table 9. Not only are a lot of observations lost for this dependent variable (about one third of the observations is lost due to missing values), but there are no constantly significant results throughout the specifications.

6.6 Channels

An interesting feature of this analysis to see through which channels the variables which appear to explain the occurrence of domestic violence work.
We have argued in sections 6.2 to 6.4 that the characteristics of a woman such as her decision making power in the household, her education, her employment and occupation status, work altogether though the channel of her status in the household and society. These results confirm results obtained by Aizer (2010), Chin (2011), Bhattacharyya et al. (2011) and others.
What is interesting to see now, is, through which channel a change in wealth could impact domestic violence. One possible channel was already pointed out by the 2012 report of the Government of Nepal: the husband's /partner's alcohol consumption. Recently, a paper regarding this topic has been published in the American Economic Review by Luca, Owens and Sharma (2015). The authors use microlevel data from India, following ongoing changes in alcohol prohibition laws, and find that the partner's alcohol consumption indeed increases gender-based violence.
In this study I explore the same channel but starting from an income shock as trig-

ger rather than a change in the legal environment. I look at alcohol consumption as an element in a chain: the impact of a change in wealth on husband's alcohol consumption behavior and finally domestic violence. Descriptive statistics show a highly significantly negative correlation between wealth and the binary variable that is equal to one if the partner / husband drinks alcohol[10]. This latter variable is, itself, highly positively correlated with each of the three variables of domestic violence (results not reported).

To explore a causal relationship between wealth and alcohol drinking behavior, as well as alcohol drinking behavior and domestic violence, a regression analysis needs to be carried out. The first regression takes the form of a Probit regression with the binary variable of alcohol consumption by husband/partner as dependent variable and wealth and a set of control variables as explanatory variables. The second Probit estimation regresses the three forms of domestic violence on alcohol consumption and the control variables.[11]

The regression tables (table 10 and table 11) can be looked at in detail in the appendix, section "Channels". Table 10 is the first to be interpreted. For all three specifications (with control variables and with district fixed effects), there is evidence for a highly significantly negative impact of wealth on the fact that the husband / partner drinks alcohol. For the third model in table 10, at the mean, an increase in wealth from one quintile to the next decreases the probability of alcohol consumption from 56% to 53.7%; vice versa for a decrease in wealth by one quintile. Table 11, which can be found in the appendix as well, shows the impact of the fact of the husband / partner drinking alcohol on the different forms of domestic violence; the coefficients being highly positively significant and of

[10]Unfortunately it is not clearly defined what it means to "drink alcohol", but it is likely to be referred to above-normal alcohol consumption (DHS, 2012)

[11]From section 6.1: First stage we know that we have two good instruments for wealth. However, for this specification, both the tests of overidentification as well as the tests of endogeneity of the supposed endogenous variable fail to hold; the model with instruments appears to be misspecified and not necessary, given that the Null-Hypothesis that the variable is exogenous cannot be rejected by the Durbin Chi-Squared and WU-Hausman Test statistics (not reported here). Thus, it is reasonable to report and interpret the Probit model for each dependent variable, without instruments.

remarkable magnitude. For physical violence, the fact of the husband/partner drinking alcohol, increases the probability of this form of violence, at the mean, from 23% to 40.4%; for sexual violence from 15% to 24.6%; and for emotional violence from 18% to 30.4%. These are noteworthy numbers and suggest that the alcohol drinking behavior of husband / partner is an important issue to keep in mind when studying domestic violence.
Luca, Owens and Sharma (2015) do not distinguish different forms of violence and find for their mean value (18%) an increase (decrease) of gender-based violence due to the partner/husband drinking (or not) alcohol of around 9 percentage points. The estimates in the present paper are slightly higher, but still consistent considering the different countries, types of violence, datasets, and estimation strategies used by each study.
Even though there are many variables impacting a man's alcohol drinking habits, as well as the probability of domestic violence (as can be seen looking at the explanatory variables in tables 10 and 11), we can conclude that one channel through which a change in wealth is likely to impact domestic violence are the alcohol drinking habits of the husband/partner.

6.7 Robustness Tests

From the former sections we see that the regressions include already a few mechanisms assuring robustness: clustered standard errors, instrumental variables, a detailed set of control variables and district fixed effects. To further check for robustness of the results, more regressions have been carried out that are, however, not reported. First of all, different measures of domestic violence have been used. Other than creating one variable for physical, sexual and emotional violence, respectively, detailed questions on each of these forms of violence have been used separately as dependent variables. One example is the separation of severe and less severe physical violence. The overall results appear to be robust to this type of test. Second, a different measure has been used to instrument wealth, a measure suggested by Miguel et al. (2004): $(Rainfall_{i2011} - Rainfall_{i2010})/Rainfall_{i2010}$.

The results appear robust to this specification as well. Furthermore, given that the NDHS dataset is very detailed and allows for a lot of controls, even more detailed specifications have been carried out, with, for example an interaction term between wealth and the amount of agricultural land, a dummy for the presence of television, the inclusion of detailed ethnic groups, using Hill and / or Mountain instead of or with Terai[12]. The results are robust also to these specifications. Finally, OLS and IV 2SLS give same signs and significance as Probit and IV Probit. On one hand, it is preferred to interpret the margins of Probit and IV Probit given the binary nature of the dependent variables. However, for a large number of fixed effects the Probit estimation technique might lead to bias, so robustness of the results should be ensured through OLS and IV 2SLS estimates. These regressions are available in the appendix.

7 Conclusion

This dissertation aims at determining the main causes and triggers of domestic violence, explaining how economic factors may outweigh cultural beliefs in their weight on domestic violence. For this purpose, the impact of an income shock on domestic violence is studied. To prevent endogeneity bias, income shocks are instrumented with rainfall shocks.

The main drivers of physical, sexual and emotional violence appear to be a woman's status in the household and in society, wealth changes and to a certain extent husband's education. Finally, detailed research focused on the Terai region would be interesting to carry out, given its overall significant impact on domestic violence. Regarding help seeking behavior unfortunately no reliable predictions can be made based on the models in this study.

These results lead to a first conclusion that wealth shocks, which might occur through rainfall shocks in the highly agricultural country of Nepal, indeed impact domestic violence. One channel through which a change in income affects do-

[12]Included alone, Hill and / or Mountain significantly decrease the probability of domestic violence; both Hill and Mountain become insignificant, once Terai is introduced in the regression.

mestic violence is likely to be the alcohol drinking habits of the husband/partner. Thus, a path towards reduction in domestic violence might involve stricter alcohol consumption laws. However, this does not face the problem at its root: a change in wealth. Therefore, a similar conclusion like the one in Björkman-Nyqvist (2013) can be drawn: the introduction of technologies or insurances, for example, that make agricultural households less prone to weather shocks, could have an indirect beneficial effect on domestic violence prevention. A second, possibly even more important channel, appears to be the status of the woman in society and in the household. Aiming for gender equality in education and on the labor market, as well as in decision making within the household, is one of the keys to counteract domestic violence. Finally, this analysis seems to confirm the statement by the 2012 report of the Government of Nepal, that the direct measures against domestic violence have had less than the desired effect. However, in this study only shelter homes are considered as direct policy. The impact of advertising and information campaigns, which are likely to increase the awareness of laws against domestic violence, are interesting to be studied in this context.

Summing up, this study shows that it is important to try to achieve the goal of a decrease in domestic violence not only through direct policies but also indirectly; through policies enhancing a woman's status in society and household, insurance systems or technologies to ensure income stability, and laws controlling alcohol consumption behavior.

References

[1] Aizer, Anna (2010) "The Gender Wage Gap and Domestic Violence", *American Economic Review*, Vol. 100, pp. 1847-1859.

[2] Bhattacharyya, Manasi and Bedi, Arjun S. and Chhachhi, Amrita (2011) "Marital Violence and Women's Employment and Property Status: Evidence from North Indian Villages", *World Development*, Vol. 39(9), pp. 1676-1689.

[3] Björkman-Nyqvist, Martina (2013) "Income shocks and gender gaps in education: Evidence from Uganda", *Journal of Development Economics*, Vol. 105, pp. 237-253.

[4] Bloch, Francis and Rao, Vijayendra (2002) "Terror as a Bargaining Instrument: A Case Study of Dowry Violence in Rural India." *American Economic Review*, Vol. 92(4), pp. 1029–1043.

[5] Bowlus, Audra J. and Shannon Seitz 2006 "Domestic Violence, Employment, and Divorce." *International Economic Review*, Vol. 47(4), pp. 1113–1149.

[6] Chin, Yoo-Mi "Male Backlash, Bargaining, or Exposure Reduction?: Women's Working Status and Physical Spousal Violence in India", *Journal of Population Economics*, Vol. 25(1), pp. 175-200.

[7] Government of Nepal, Office of the Prime Minister and Council of Ministers (2012) *A Study on Gender-Based Violence Conducted in Selected Rural Districts of Nepal*

[8] Khan, Hafiz Muhammad Ather and Sindher, Riaz Hussain Khan and Hussain, Irshad (2013) "Studying the Role of Education in Eliminating Violence against Women", *Pakistan Journal of Commerce and Social Sciences*, Vol. 7(2), pp. 405-416.

[9] Koenig, Michael A. (2003) "Women's Status and Domestic Violence in Rural Bangladesh: Individual- and Community-Level Effects", *Demography*, Vol. 40(2), pp. 269-288.

[10] Luca, Dara Lee and Owens, Emily and Sharma, Gunjan (2015) "Can Alcohol Prohibition Reduce Violence against Women?" *American Economic Review*, Vol. 105(5), pp. 625-629.

[11] Miguel, Edward (2005) "Poverty and Witch Killing", *Review of Economic Studies*, Vol. 72, pp. 1153-1172.

[12] Miguel, Edward and Satyanath, Shanker and Sergenti, Ernest (2004) "Economic Shocks and Civil Conflict: An Instrumental Variables Approach", *Journal of Political Economy*, Vol. 112(4), pp. 725-753.

[13] Moock, Peter R. and Leslie, Joanne (1986) "Childhood malnutrition and schooling in the Terai region of Nepal'", *Journal of Development Economics*, Vol. 20(1), pp. 33-52.

[14] Panda, Pradeep and Agarwal, Bina (2005) “Marital Violence, Human Development and Women’s Property Status in India" *World Development*, Vol. 33(5), pp. 823-850.

[15] Rutstein, Shea Oscar and Johnson, Kiersten (2004) “The DHS Wealth Index" *DHS Comparative Reports*, No. 6, pp. 1-71.

[16] United Nations (2015), *Millennium Development Goals And Beyond 2015*. Available from: <http://www.un.org/millenniumgoals/>. [31 May 2015].

[17] United States Agency for International Development (2011) “Standard Recode Manual for DHS 6", *Demographic and Health Surveys Methodology*

[18] USAID (2015), *Nepal agriculture and food security*. Available from: <http://www.usaid.gov/nepal/agriculture-and-food-security>. [31 May 2015].

[19] Weitzman, Abigail (2014) “Women’s and Men’s Relative Status and Intimate Partner Violence in India", *Population and Development Review*, Vol. 40(1), pp. 55-75.

[20] Women’s Rehabilitation Centre Nepal (2009) *Violence against women*

[21] Yount, Kathryn M. and Halim, Nafisa and Schuler, Sidney Ruth and Head, Sara (2013) “A Survey Experiment of Women’s Attitudes about Intimate Partner Violence against Women in Rural Bangladesh" *Demography*, Vol. 50(1), pp. 333-357.

8 Appendix

8.1 Detailed data description

A women is considered having suffered from physical violence if, in the following question, she answered with "Yes" at least once for items (a) until (g); and is considered having suffered from sexual violence if she answered "Yes" at least once for questions (h) and (i).
“(Does/did) your (last) (husband/partner) ever:[13]
(a) Push you, shake you, or throw something at you?
(b) Slap you?
(c) Twist your arm or pull your hair?
(d) Punch you with his fist or with something that could hurt you?
(e) Kick you, drag you, or beat you up?
(f) Try to choke you or burn you on purpose?
(g) Threaten or attack you with a knife, gun, or any other weapon?
(h) Physically force you to have sexual intercourse with him even when you did not want to?
(i) Force you to perform any sexual acts you did not want to?"
Similarly, an ever-married woman is considered having experienced emotional violence by having answered with "Yes" at least one of the following questions.
“(Does/did) your (last) (husband/partner) ever:[14]
(a) Say or do something to humiliate you in front of others?
(b) Threaten to hurt or harm you or someone close to you?
(c) Insult you or make you feel bad about yourself?"
Variable “Woman’s empowerment": variable is equal to one if a woman answers "Yes" to one of the following questions: Respondent decides alone or together with her husband about: (a) how to spend respondent’s earnings, (b) the respondent’s health care, (c) large household purchases, (d) visits to family or relatives, (e) what to do with the money the husband earns. (NDHS, 2011)

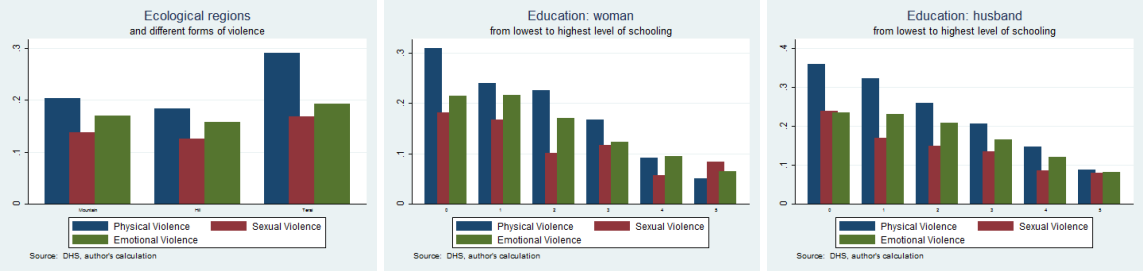
[13]Question taken from the original 2011 NDHS questionnaire, module on domestic violence.
[14]Question taken from the original 2011 NDHS questionnaire, module on domestic violence.

Variable “Beating justified": Is included only in the Physical Violence and Help Seeking Behavior regressions. This variable is equal to one if a woman answers "Yes" to one of the following questions: Beating is justified if (a) wife goes out without telling husband, (b) wife neglects the children, (c) wife argues with her husband, (d) wife refuses to have sex with husband, (e) wife burns the food. (NDHS, 2011)

Educational attainment for both woman and husband is measured in six categories: No education, Incomplete primary education, Complete primary education, Incomplete secondary education, Complete secondary education and Higher education. (NDHS, 2011)

8.2 Descriptive Statistics

Figure 1



The blue bar in Figure 1 represents physical violence, the red bar sexual violence and the green bar emotional violence. Physical Violence, Sexual Violence and Emotional Violence are binary variables, equal to one if the interviewed woman has ever suffered from the respective form or violence and zero otherwise. Person seeked help is a binary variable equal to one if the interviewed woman has seeked help, conditional on having experienced any form of violence. Ecological region refers to the current residence of the household, representing the respective ethnicities in the areas. Education: Woman and Education: Husband refer to the educational attainment of woman and husband.

Figure 1 shows three characteristics that are crucial in explaining the occurrence of domestic violence. Current residence in the Terai area, and thus associated to the ethnicities in this area, seems to imply a higher incidence of all three forms of domestic violence. The Terai area is the southernmost ecological region in Nepal (the other two being Hill and Mountain), that borders India. The Terai stretches to the two sides of the Indian-Nepalese border and thus the inhabitants of this area share not only cultural but also economic characteristics. The Terai area in Nepal accounts for more than half of Nepal’s total agricultural production

(Moock & Leslie (1986).
Woman's educational attainment as well as husband's educational attainment seem to significantly reduce the incidence of all three forms of domestic violence; strong evidence for physical and emotional violence, less evident for sexual violence.

8.3 Channels

Table 10: Husband / partner drinks alcohol

	(1)	(2)	(3)
Wealth	−0.0531***	−0.0211**	−0.0234**
	(0.00671)	(0.00996)	(0.0104)
Muslim	−0.623***	−0.728***	−0.737***
	(0.0918)	(0.143)	(0.142)
Christian	−0.160*	−0.220**	−0.267***
	(0.0848)	(0.0933)	(0.0941)
Buddhist	0.0244	−0.0100	−0.0661
	(0.0715)	(0.0800)	(0.0832)
Hindu	−0.134**	−0.138*	−0.198***
	(0.0666)	(0.0727)	(0.0755)
Terai Region	0.0225	−0.0108	
	(0.0184)	(0.0221)	
Urban	0.0711***	0.0773***	0.0741***
	(0.0207)	(0.0251)	(0.0262)
District has shelter homes	0.00457	−0.00371	
	(0.0191)	(0.0217)	
Woman's empowerment		0.0907***	0.0930***
		(0.0256)	(0.0266)
Education: woman		−0.0285***	−0.0276***
		(0.00768)	(0.00781)
Woman self employed		−0.00624	−0.0111
		(0.0379)	(0.0397)
Woman works for family member		−0.0742***	−0.0839***
		(0.0249)	(0.0250)
Woman's current age		0.000507	0.000708
		(0.00139)	(0.00133)
Woman currently pregnant		−0.0432	−0.0513
		(0.0418)	(0.0403)
Number of living children		0.0134	0.0128
		(0.00860)	(0.00876)
Education: husband		−0.0268***	−0.0283***
		(0.00784)	(0.00785)
Beating justified		−0.204	−0.0789
		(0.127)	(0.137)
District Fixed Effects	*No*	*No*	*Yes*
Mean: Husband drinks alcohol	0.56	0.56	0.56
Observations	3546	2680	2680

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables. For detailed description see section 3: Data. Husband / partner drinks alcohol is a binary variable equal to one if the partner / husband consumes alcohol. The table further includes the fact of belonging to one of the four out of five religions, of living in the Terai region, of living in an urban area and of living in a district that has shelter homes for women who experienced violence. Further control variables regard characteristics of the woman, her husband and the household. These variables are described in detail in section 5: Empirical strategy.

Table 11: Domestic violence

	(1) Physical Violence	(2) Sexual Violence	(3) Emotional Violence
Husband/partner drinks alcohol	0.174***	0.0964***	0.124***
	(0.0158)	(0.0140)	(0.0159)
Woman's empowerment	−0.0430*	−0.0765***	−0.0124
	(0.0234)	(0.0195)	(0.0200)
Education: woman	−0.0238***	−0.0112*	−0.0206***
	(0.00660)	(0.00636)	(0.00625)
Woman self employed	−0.0722**	−0.0774***	−0.0830***
	(0.0318)	(0.0270)	(0.0295)
Woman works for family member	−0.0586**	−0.0619***	−0.0539***
	(0.0229)	(0.0191)	(0.0189)
Woman's current age	0.000413	−0.000343	−0.00113
	(0.00120)	(0.00119)	(0.00114)
Woman currently pregnant	−0.0153	0.0237	−0.00526
	(0.0349)	(0.0312)	(0.0330)
Number of living children	0.0131**	0.00865	0.0104*
	(0.00623)	(0.00613)	(0.00575)
Education: husband	−0.0211***	−0.0155***	−0.00778
	(0.00572)	(0.00555)	(0.00566)
beatjust	0.0220	0.157*	0.267***
	(0.129)	(0.0918)	(0.0832)
Muslim	0.191**	0.160*	0.118
	(0.0938)	(0.0873)	(0.0947)
Christian	0.0458	0.0849	0.0468
	(0.0742)	(0.0640)	(0.0653)
Buddhist	−0.0765	−0.0214	−0.0632
	(0.0628)	(0.0520)	(0.0598)
Hindu	−0.0730	0.00647	−0.0154
	(0.0592)	(0.0478)	(0.0546)
Urban	0.0250	0.00993	0.00807
	(0.0221)	(0.0189)	(0.0200)
District Fixed Effects	*Yes*	*Yes*	*Yes*
Mean: Each dependent variable	0.23	0.15	0.18
Observations	2653	2446	2611

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Husband / partner drinks alcohol is a binary variable equal to one if the partner / husband consumes alcohol. Physical Violence, Sexual Violence and Emotional Violence are binary variables, equal to one if the interviewed woman has ever suffered from the respective form or violence and zero otherwise. The table further includes the fact of belonging to one of the four out of five religions, of living in the Terai region, of living in an urban area and of living in a district that has shelter homes for women who experienced violence. Further control variables regard characteristics of the woman, her husband and the household. These variables are described in detail in section 5: Empirical strategy.

8.4 Linear Probability Model

Table 12: Physical Violence

	(1)		(2)		(3)	
	OLS	IV 2SLS	OLS	IV 2SLS	OLS	IV 2SLS
Wealth	−0.0559***	−0.0351**	−0.0196**	−0.0302	−0.0237**	0.00349
	(0.00563)	(0.0177)	(0.00834)	(0.0332)	(0.00924)	(0.110)
Muslim	0.0861	0.0882	0.115	0.123	0.150	0.140
	(0.0819)	(0.0712)	(0.122)	(0.145)	(0.124)	(0.104)
Christian	0.0488	0.0493	0.0489	0.0500	0.0234	0.0242
	(0.0769)	(0.0764)	(0.0889)	(0.0793)	(0.0895)	(0.0786)
Buddhist	−0.0840	−0.0897	−0.0845	−0.0802	−0.0762	−0.0822
	(0.0604)	(0.0604)	(0.0652)	(0.0732)	(0.0658)	(0.0700)
Hindu	−0.0723	−0.0749	−0.0835	−0.0816	−0.0933	−0.0988
	(0.0561)	(0.0575)	(0.0615)	(0.0641)	(0.0625)	(0.0633)
Terai Region	0.145***	0.128***	0.117***	0.124***	−0.0478	0.148
	(0.0168)	(0.0223)	(0.0213)	(0.0275)	(0.150)	(0.115)
Urban	0.0345*	0.00475	0.0516**	0.0605*	0.0471*	0.0276
	(0.0186)	(0.0330)	(0.0222)	(0.0342)	(0.0251)	(0.0823)
District has shelter homes	0.00313	−0.00290	−0.0172	−0.0157		
	(0.0141)	(0.0151)	(0.0156)	(0.0162)		
Woman's empowerment			−0.0219	−0.0218	−0.0279	−0.0261
			(0.0245)	(0.0212)	(0.0251)	(0.0247)
Education: woman			−0.0229***	−0.0203**	−0.0230***	−0.0278
			(0.00620)	(0.00823)	(0.00644)	(0.0205)
Woman self employed			−0.108***	−0.103***	−0.0843**	−0.0981
			(0.0310)	(0.0348)	(0.0329)	(0.0639)
Woman works for family member			−0.114***	−0.115***	−0.0920***	−0.0940***
			(0.0242)	(0.0265)	(0.0259)	(0.0244)
Woman's current age			0.000611	0.00112	0.000818	−0.000135
			(0.00133)	(0.00175)	(0.00134)	(0.00406)
Woman currently pregnant			−0.0336	−0.0359	−0.0219	−0.0184
			(0.0319)	(0.0336)	(0.0312)	(0.0364)
Number of living children			0.0144**	0.0129	0.0148**	0.0172
			(0.00701)	(0.00840)	(0.00719)	(0.0119)
Education: husband			−0.0266***	−0.0245**	−0.0246***	−0.0303
			(0.00678)	(0.0106)	(0.00661)	(0.0237)
Beating justified			0.0254	0.0288	0.00388	−0.00404
			(0.149)	(0.141)	(0.154)	(0.122)
District Fixed Effects	*No*	*No*	*No*	*No*	*Yes*	*Yes*
Mean: Physical Violence	0.23	0.23	0.23	0.23	0.23	0.23
Observations	3546	3546	2680	2680	2653	2653

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables; these variables containing detailed information on household assets and utility services. For detailed description see section 3: Data. Physical Violence, Sexual Violence and Emotional Violence are binary variables, equal to one if the interviewed woman has ever suffered from the respective form or violence and zero otherwise. The instruments for wealth are the deviation of the logarithm of average rainfall in 2011 from the logarithm of the total average rainfall over the years 1999 to 2011, and this term squared. The table further includes the fact of belonging to one of the four out of five religions, of living in the Terai region and thus one of its ethnicities, of living in an urban area and of living in a district that has shelter homes for women who experienced violence. Further control variables regard characteristics of the woman, her husband and the household. These variables are described in detail in section 5: Empirical strategy.

Table 13: Sexual Violence

	(1)		(2)		(3)	
	OLS	IV 2SLS	OLS	IV 2SLS	OLS	IV 2SLS
Wealth	−0.0342***	−0.0638***	−0.0126*	−0.0855***	−0.0125	−0.132
	(0.00515)	(0.0169)	(0.00731)	(0.0264)	(0.00837)	(0.0962)
Muslim	0.0471	0.0441	0.116	0.170	0.152	0.195**
	(0.0703)	(0.0778)	(0.124)	(0.141)	(0.121)	(0.0909)
Christian	0.0941	0.0934	0.0633	0.0713	0.0756	0.0720
	(0.0677)	(0.0616)	(0.0751)	(0.0721)	(0.0736)	(0.0690)
Buddhist	−0.0458	−0.0376	−0.0558	−0.0260	−0.0296	−0.00298
	(0.0475)	(0.0403)	(0.0512)	(0.0542)	(0.0512)	(0.0614)
Hindu	−0.0188	−0.0151	−0.0226	−0.00916	−0.00595	0.0184
	(0.0452)	(0.0419)	(0.0492)	(0.0567)	(0.0478)	(0.0556)
Terai Region	0.0640***	0.0878***	0.0441***	0.0953***	−0.0408	0.0979
	(0.0146)	(0.0202)	(0.0165)	(0.0239)	(0.153)	(0.101)
Urban	0.0320**	0.0745***	0.0316*	0.0927***	0.0216	0.108
	(0.0149)	(0.0273)	(0.0186)	(0.0284)	(0.0204)	(0.0720)
District has shelter homes	−0.00532	0.00328	−0.0142	−0.00378		
	(0.0123)	(0.0129)	(0.0139)	(0.0141)		
Woman's empowerment			−0.0554***	−0.0544**	−0.0629***	−0.0708***
			(0.0208)	(0.0235)	(0.0211)	(0.0217)
Education: woman			−0.00993*	0.00823	−0.00947	0.0114
			(0.00576)	(0.00792)	(0.00576)	(0.0179)
Woman self employed			−0.0995***	−0.0629**	−0.0783***	−0.0177
			(0.0248)	(0.0260)	(0.0255)	(0.0559)
Woman works for family member			−0.102***	−0.108***	−0.0820***	−0.0734***
			(0.0209)	(0.0179)	(0.0222)	(0.0214)
Woman's current age			−0.000355	0.00310*	−0.000233	0.00395
			(0.00118)	(0.00163)	(0.00120)	(0.00354)
Woman currently pregnant			0.00483	−0.0106	0.0109	−0.00415
			(0.0298)	(0.0277)	(0.0303)	(0.0319)
Number of living children			0.00941	−0.000689	0.00864	−0.00189
			(0.00669)	(0.00728)	(0.00651)	(0.0104)
Education: husband			−0.0168***	−0.00202	−0.0166***	0.00824
			(0.00606)	(0.00906)	(0.00602)	(0.0207)
District Fixed Effects	*No*	*No*	*No*	*No*	*Yes*	*Yes*
Mean: Sexual Violence	0.15	0.15	0.15	0.15	0.15	0.15
Observations	3546	3546	2680	2680	2446	2446

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables; these variables containing detailed information on household assets and utility services. For detailed description see section 3: Data. Physical Violence, Sexual Violence and Emotional Violence are binary variables, equal to one if the interviewed woman has ever suffered from the respective form or violence and zero otherwise. The instruments for wealth are the deviation of the logarithm of average rainfall in 2011 from the logarithm of the total average rainfall over the years 1999 to 2011, and this term squared. The table further includes the fact of belonging to one of the four out of five religions, of living in the Terai region and thus one of its ethnicities, of living in an urban area and of living in a district that has shelter homes for women who experienced violence. Further control variables regard characteristics of the woman, her husband and the household. These variables are described in detail in section 5: Empirical strategy.

Table 14: Emotional Violence

	(1)		(2)		(3)	
	OLS	IV 2SLS	OLS	IV 2SLS	OLS	IV 2SLS
Wealth	−0.0378***	−0.0154	−0.0137	−0.00208	−0.0195**	0.0358
	(0.00550)	(0.0155)	(0.00834)	(0.0292)	(0.00865)	(0.100)
Muslim	0.0208	0.0231	0.0483	0.0397	0.0522	0.0323
	(0.0776)	(0.0708)	(0.133)	(0.122)	(0.130)	(0.0950)
Christian	0.0769	0.0775	0.0567	0.0555	0.0125	0.0141
	(0.0720)	(0.0801)	(0.0809)	(0.0592)	(0.0794)	(0.0721)
Buddhist	−0.0582	−0.0644	−0.0740	−0.0787	−0.0719	−0.0842
	(0.0554)	(0.0528)	(0.0607)	(0.0581)	(0.0614)	(0.0642)
Hindu	−0.0192	−0.0221	−0.0337	−0.0358	−0.0414	−0.0526
	(0.0506)	(0.0510)	(0.0560)	(0.0487)	(0.0572)	(0.0581)
Terai Region	0.0609***	0.0429**	0.0427**	0.0346	−0.0471	0.0915
	(0.0154)	(0.0207)	(0.0195)	(0.0272)	(0.124)	(0.105)
Urban	0.0311*	−0.000828	0.0510**	0.0413	0.0282	−0.0115
	(0.0168)	(0.0224)	(0.0217)	(0.0315)	(0.0228)	(0.0752)
District has shelter homes	−0.0224*	−0.0289*	−0.0458***	−0.0475***		
	(0.0130)	(0.0156)	(0.0154)	(0.0156)		
Woman's empowerment			0.0106	0.0104	−0.00429	−0.000630
			(0.0203)	(0.0210)	(0.0203)	(0.0226)
Education: woman			−0.0174***	−0.0203**	−0.0209***	−0.0306
			(0.00584)	(0.00872)	(0.00620)	(0.0187)
Woman self employed			−0.109***	−0.115***	−0.0879***	−0.116**
			(0.0281)	(0.0307)	(0.0290)	(0.0584)
Woman works for family member			−0.0896***	−0.0886***	−0.0789***	−0.0829***
			(0.0225)	(0.0208)	(0.0227)	(0.0223)
Woman's current age			−0.000800	−0.00135	−0.000829	−0.00276
			(0.00120)	(0.00182)	(0.00121)	(0.00370)
Woman currently pregnant			−0.0218	−0.0193	−0.0140	−0.00704
			(0.0296)	(0.0301)	(0.0296)	(0.0333)
Number of living children			0.00978	0.0114*	0.0114*	0.0163
			(0.00633)	(0.00656)	(0.00638)	(0.0108)
Education: husband			−0.0133**	−0.0157*	−0.00922	−0.0207
			(0.00663)	(0.00907)	(0.00653)	(0.0217)
District Fixed Effects	*No*	*No*	*No*	*No*	*Yes*	*Yes*
Mean: Emotional Violence	0.18	0.18	0.18	0.18	0.18	0.18
Observations	3546	3546	2680	2680	2611	2611

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables; these variables containing detailed information on household assets and utility services. For detailed description see section 3: Data. Physical Violence, Sexual Violence and Emotional Violence are binary variables, equal to one if the interviewed woman has ever suffered from the respective form or violence and zero otherwise. The instruments for wealth are the deviation of the logarithm of average rainfall in 2011 from the logarithm of the total average rainfall over the years 1999 to 2011, and this term squared. The table further includes the fact of belonging to one of the four out of five religions, of living in the Terai region and thus one of its ethnicities, of living in an urban area and of living in a district that has shelter homes for women who experienced violence. Further control variables regard characteristics of the woman, her husband and the household. These variables are described in detail in section 5: Empirical strategy.

Table 15: Woman seeked help

	(1)		(2)		(3)	
	OLS	IV 2SLS	OLS	IV 2SLS	OLS	IV 2SLS
Wealth	0.0162*	0.0530*	0.00548	0.0225	0.00813	0.0836
	(0.00938)	(0.0298)	(0.0144)	(0.0528)	(0.0177)	(0.137)
Muslim	−0.280**	−0.283**	−0.232*	−0.244	−0.175	−0.196
	(0.109)	(0.122)	(0.134)	(0.168)	(0.140)	(0.145)
Christian	−0.0367	−0.0470	−0.0166	−0.0208	0.0424	0.0326
	(0.117)	(0.139)	(0.126)	(0.142)	(0.136)	(0.119)
Buddhist	−0.0597	−0.0781	−0.105	−0.115	−0.0408	−0.0642
	(0.109)	(0.126)	(0.123)	(0.128)	(0.132)	(0.117)
Hindu	−0.170*	−0.176	−0.146	−0.149	−0.0925	−0.113
	(0.0980)	(0.110)	(0.106)	(0.119)	(0.116)	(0.105)
Terai Region	0.00343	−0.0205	0.0149	0.00506	−0.0594	−0.0393
	(0.0248)	(0.0343)	(0.0328)	(0.0451)	(0.329)	(0.187)
Urban	−0.0163	−0.0598	0.0273	0.0147	−0.0135	−0.0591
	(0.0292)	(0.0448)	(0.0356)	(0.0543)	(0.0424)	(0.0912)
District has shelter homes	0.0394	0.0234	0.00213	−0.00244		
	(0.0276)	(0.0289)	(0.0319)	(0.0399)		
Woman's empowerment			0.0204	0.0230	0.0224	0.0324
			(0.0362)	(0.0366)	(0.0374)	(0.0436)
Education: woman			0.0105	0.00591	0.00431	−0.00717
			(0.0134)	(0.0157)	(0.0145)	(0.0246)
Woman self employed			−0.0491	−0.0608	−0.0410	−0.0885
			(0.0505)	(0.0794)	(0.0548)	(0.101)
Woman works for family member			−0.0135	−0.0132	−0.0305	−0.0424
			(0.0346)	(0.0363)	(0.0363)	(0.0413)
Woman's current age			0.00343*	0.00277	0.00271	0.000518
			(0.00199)	(0.00236)	(0.00200)	(0.00448)
Woman currently pregnant			0.00174	0.00593	0.0179	0.0264
			(0.0594)	(0.0548)	(0.0602)	(0.0640)
Number of living children			0.00408	0.00600	0.00906	0.0156
			(0.0102)	(0.0122)	(0.0103)	(0.0161)
Education: husband			0.00695	0.00379	0.00679	−0.00781
			(0.0103)	(0.0146)	(0.0111)	(0.0285)
Beating justified			−0.0455	−0.0481	0.0390	0.0327
			(0.126)	(0.147)	(0.131)	(0.159)
District Fixed Effects	*No*	*No*	*No*	*No*	*Yes*	*Yes*
Mean: Woman seeked help	0.21	0.21	0.21	0.21	0.21	0.21
Observations	1190	1190	883	883	778	778

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Wealth is an index constructed by the DHS to measure a household's economic status, constructed from a large set of other indicator variables; these variables containing detailed information on household assets and utility services. For detailed description see section 3: Data. Person seeked help is a binary variable equal to one if the interviewed woman has seeked help, conditional on having experienced any form of violence. The instruments for wealth are the deviation of the logarithm of average rainfall in 2011 from the logarithm of the total average rainfall over the years 1999 to 2011, and this term squared. The table further includes the fact of belonging to one of the four out of five religions, of living in the Terai region and thus one of its ethnicities, of living in an urban area and of living in a district that has shelter homes for women who experienced violence. Further control variables regard characteristics of the woman, her husband and the household. These variables are described in detail in section 5: Empirical strategy.